PATENT ABSTRACTS OF JAPAN

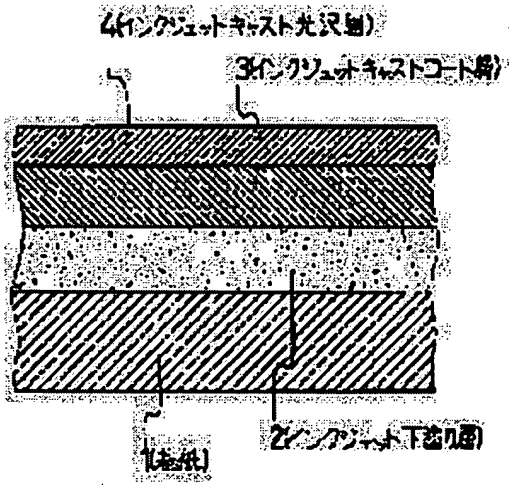
(11)Publication number : **2000-062314**
(43)Date of publication of application : **29.02.2000**

(51)Int.CI. B41M 5/00
B32B 27/00

(21)Application number : **10-235700**
(22)Date of filing : **21.08.1998**

(71)Applicant : **NIPPON KAKOH SEISHI KK**
HITACHI MAXELL LTD
(72)Inventor : **NOHARA KUNIO**
MIYAKE SHINYA
MIYATA ICHIJI
KONO KENJI

(54) INK JET RECORDING PAPER AND MANUFACTURE THEREOF



(57)Abstract:
PROBLEM TO BE SOLVED: To improve the gloss-smooth feeling, print density and print water resistance of a recording paper by a method wherein an ink jet cast coating layer and an ink jet cast bright layer are successively laminated through an ink jet primer coating layer so as to realize the specified percentage of the 60° specular gloss according to JIS Z 8741 at the outermost surface of the recording paper.
SOLUTION: This recording paper has a four-layered structure, which is formed by successively laminating an ink jet cast coating layer 3 and an ink jet cast bright layer 4 so as to form a two-layered cast layer through an ink jet primer coating layer 2 formed on one side of a base paper 1. The 60° specular gloss according to JIS Z 8741 at the outermost surface of a recording paper is set to be 60-80%. The object for forming the ink jet primer coating layer 2 is to make the surface of the base paper 1 smooth by covering, to realize much more improve the smoothnesses of the ink jet cast coating layer 3 and of the ink jet cast bright layer 4, to much more improve the print color density of an ink jet and the like.

LEGAL STATUS

[Date of request for examination] 01.02.2005

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

CLAIMS

[Claim(s)]

[Claim 1] The ink jet recording paper characterized by having carried out the laminating of an ink jet cast coat layer and the ink jet cast gloss layer one by one, and making 60-degree specular gloss by JIS-Z -8741 on the front face of the maximum into 60 - 80% through the ink jet under coat formed in one field of a base paper.

[Claim 2] The ink jet recording paper according to claim 1 which the pigments which constitute an ink jet under coat are a silica and/or hydrated alumina, and a cation-ized agent contains as an additive.

[Claim 3] The ink jet recording paper according to claim 1 or 2 whose pigment which constitutes an ink jet cast coat layer is gamma-alumina.

[Claim 4] The ink jet recording paper given in either claim 1 whose pigment which constitutes an ink jet cast gloss layer is colloidal silica, claim 2 or claim 3.

[Claim 5] To one field of a base paper, as a pigment, a silica and/or hydrated alumina It is the ink jet primer which a cation-ized agent contains as an additive by dry conversion 5-20g/m2 It applies, and it dries and an under coat is formed. With a cast coater on this ink jet under coat by the sentiment method It is the ink jet cast coat coating which used gamma-alumina as a pigment by dry conversion 4 - 15 g/m2 It applies, and it dries and an ink jet cast coat layer is formed. Subsequently On this ink jet cast coat layer, with a cast coater by the sentiment method It is the ink jet cast gloss coating which used colloidal silica as a pigment by dry conversion 0.5 - 5 g/m2 Apply, and dry and an ink jet cast gloss layer is formed. The manufacture approach of the ink jet recording paper characterized by making 60-degree specular gloss by JIS-Z -8741 on the front face of the maximum into 60 - 80%.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the ink jet recording paper and its manufacture approach for photograph grade.
[0002]
[Description of the Prior Art] The ink of a liquid is injected to printers, such as facsimile, a word processor, and a personal computer, in the shape of jet from the nozzle of a special structure, and the ink jet printer which controls the track, is made to adhere to a form, and is printed is widely used for them. Moreover, the ink jet recording paper which made many properties, such as the perfect circle nature of fixable and absorptivity of the ink for ink jets, printing concentration, and a dot configuration, the Sharp nature of the dot circumference, glossiness, a whiteness degree, a water resisting property, and dimensional stability by moisture absorption/desorption, hold as a form used for this is used.
[0003] However, it is in said ink jet recording paper, and the ink jet recording paper holding fixable, absorptivity, etc. of high glossiness, the gloss smooth feeling near a photograph, high printing concentration, and the outstanding ink for ink jets is demanded as a property of the recording surface especially as an object for photograph grade.
[0004] As an approach of giving such a more advanced property On the front face of a high gloss print sheet like the art paper used for usual, or cast coated paper The approach of applying directly resin and the emulsions of a drainage system, such as PVA, a polyvinyl pyrrolidone, polyurethane, and a polyvinyl acetal, as a finishing agent, Apply resin and the emulsion of said drainage system directly on the surface of polyester film, and when this application side is the damp or wet condition of half-desiccation, pile up paper of fine quality etc., dry as it is, and the polyester film after desiccation is removed. The application constituent of the film replica method which copies the surface gloss and smooth nature of polyester film, and the cast coat layer of cast coated paper is improved at the same time it forms the resin of said drainage system, and the coat of an emulsion in front faces, such as paper of fine quality. There is the approach of giving a property to cast coated paper itself etc.
[0005]
[Problem(s) to be Solved by the Invention] However, although the glossiness and smooth nature of until are obtained to some extent by choosing resin by the approach of applying resin and the emulsion of said drainage system directly The absorptivity of ink jet ink becomes late. Cause blocking of ink jet ink or A blot of ink jet ink arises in the interface of the heavy part of ink jet ink, or ink jet ink, or **** happens during transit within the printer twisted badly [absorption of ink jet ink], and the satisfactory thing is not obtained.
[0006] Moreover, the condition of the front face of polyester film is copied in said film replica method, and this is also difficult for being to some extent easy to produce nonuniformity with the glossiness and smooth nature of until partial on the front face which it is influenced by the glossiness and smooth nature which the film itself has, and was made to imprint although obtained, and a feeling with BOKO, and obtaining a gloss smooth feeling like a photograph.
[0007] Furthermore, although many things are examined to selection of a pigment,

selection of adhesives, selection of various kinds of additives, etc. as amelioration of the application constituent of said cast coat layer, the thing of still sufficient quality is not obtained.

[0008] Then, especially artificers try re-evaluation also about the stratification of cast coated paper at the same time they perform re-evaluation to a pigment among cast coat application constituents.

[0009] It is in the purpose of this invention offering the ink jet recording paper which canceled un-arranging [of said conventional example] and held high glossiness, the gloss smooth feeling near a photograph, high printing concentration, the outstanding printing water resisting property, fixable [outstanding], absorptivity of ink jet ink, etc. to the recording surface of the ink jet recording paper, and its manufacture approach.

[0010]

[Means for Solving the Problem] In order to attain the purpose of this invention, the ink jet under coat formed [1st] in one field of a base paper is minded. The laminating of an ink jet cast coat layer and the ink jet cast gloss layer was carried out one by one, and 60-degree specular gloss by JIS-Z -8741 on the front face of the maximum was made into 60 - 80%, In the 2nd, the pigments which constitute an ink jet under coat are a silica and/or hydrated alumina, and a cation-ized agent contains as an additive, The pigment which constitutes an ink jet cast coat layer in the 3rd is gamma-alumina, The pigment which constitutes an ink jet cast gloss layer in the 4th is colloidal silica, As a pigment to one field of a base paper a silica and/or hydrated alumina [5th] It is the ink jet primer which a cation-ized agent contains as an additive by dry conversion 5-20g/m2 It applies, and it dries and an under coat is formed. With a cast coater on this ink jet under coat by the sentiment method It is the ink jet cast coat coating which used gamma-alumina as a pigment by dry conversion 4 - 15 g/m2 It applies, and it dries and an ink jet cast coat layer is formed. Subsequently On this ink jet cast coat layer, with a cast coater by the sentiment method It is the ink jet cast gloss coating which used colloidal silica as a pigment by dry conversion 0.5 - 5 g/m2 Apply, and dry and an ink jet cast gloss layer is formed. Let it be a summary to have made 60-degree specular gloss by JIS-Z-8741 on the front face of the maximum into 60 - 80%.

[0011] According to this invention according to claim 1, the cast application layer formed in two-layer in the ink jet cast coat layer and the ink jet cast gloss layer acts each other mutually, and serves as the ink jet recording paper holding properties, such as fixable, the absorptivity, etc. of 60 - 80% of high glossiness, the gloss smooth feeling near a photograph, high printing concentration, the outstanding printing water resisting property, and outstanding ink jet ink, with the 60-degree specular gloss according [the maximum front face] to JIS-Z -8741.

[0012] In addition, in having formed the cast application layer of any one layer of an ink jet cast coat layer or an ink jet cast gloss layer, the ink jet recording paper holding the above properties is not obtained.

[0013] According to this invention according to claim 2, the granularity of the front face of a base paper is covered, it is made smooth nature, and the smooth nature of the ink jet cast coat layer formed on this and an ink jet cast gloss layer is raised. Moreover, when a cation-ized agent contains, the coloring concentration of ink jet ink is raised. Furthermore, by formation of an ink jet under coat, dispersion in permeability becomes small and the cast workability when forming the ink jet cast coat layer and ink jet cast

gloss layer which are formed on this is raised further.
[0014] Let exertion of the property of the ink jet cast gloss layer formed on this be a more effective thing, without according to this invention according to claim 3, absorbing ink jet ink certainly, rubbing and causing ** blocking, smeariness, etc.
[0015] Since colloidal silica was used for the pigment of an ink jet cast gloss layer according to this invention according to claim 4 When an ink jet cast gloss coating is applied on an ink jet cast coat layer, the colloidal silica of a very fine particle enters into the detailed crack and the irregularity of an ink jet cast coat layer. It is presumed that making an ink jet cast coat layer smoother and the property that the ink jet cast gloss coating itself has become entangled, and the gloss smooth feeling near high glossiness and a high photograph is obtained.
[0016] Since the cast layer was formed in two-layer by the sentiment method, while according to this invention according to claim 5 being easy to carry out field formation of a cast side and acquiring the stable workability, the ink jet recording paper which held many above properties in the quality side can be manufactured cheaply easily.
[0017]
[Embodiment of the Invention] The ink jet recording paper of this invention and the gestalt of operation of the manufacture approach are explained below. Drawing 1 is the vertical section side elevation of the ink jet recording paper of this invention.
[0018] As shown in drawing 1 , through the ink jet under coat 2 formed in one field of a base paper 1, the ink jet detail paper of this invention is 4 layer structures which carried out the laminating of the two-layer cast layer of the ink jet cast coat layer 3 and the ink jet cast gloss layer 4 one by one, and constituted it, and makes 60-degree specular gloss by JIS-Z -8741 on the front face of the maximum 60 - 80%.
[0019] A base paper 1 is used [from] among paper of fine quality, the stencil paper for art coat paper, the stencil paper for cast coated paper, fine coated paper, etc., choosing it suitably. As a basis weight of a base paper 1, it is usually 30 - 250 g/m2. The thing of extent is used.
[0020] The ink jet under coat 2 is the ink jet primer by dry conversion to one field of a base paper 1 5 - 20 g/m2 Application desiccation is carried out, and after desiccation, if needed, data smoothing is performed to extent and it is formed in it. The presentation of this ink jet primer uses a pigment, adhesives, and a cation-ized agent as a principal component, and addition use of a dispersant, a viscous regulator, the cross linking agent, etc. is carried out suitably at this if needed.
[0021] The purpose which forms the ink jet under coat 2 The smooth nature of the ink jet cast coat layer 3 which covers the granularity of the front face of a base paper 1, makes smooth, and is formed on this, and the ink jet cast gloss layer 4 is raised further, It is because the cast workability when forming raising the printing coloring concentration of ink jet ink further, the ink jet cast coat layer which makes dispersion in permeability small and is formed on this, and an ink jet cast gloss layer is raised.
[0022] independent [in a silica, colloidal silica, hydrated alumina, a kaolin, a calcium carbonate, a titanium dioxide, a zinc oxide, a satin white, an organic pigment, etc.] as a pigment of the ink jet under coat 2 -- or although it can be used together and used, a silica and hydrated alumina are used preferably especially.
[0023] As adhesives of the ink jet under coat 2, the emulsion of synthetic resin, such as water soluble resin, such as PVA, a polyvinyl pyrrolidone, CMC, hydroxyethyl cellulose,

casein, gelatin, starch, and sodium alginate, and also vinyl acetate, a vinyl chloride vinyl acetate copolymer, a styrene butadiene copolymer, polyurethane, an acrylic copolymer, and a maleic-acid copolymer, is used. these choose suitably and are independent -- or it uses together and optimum dose is used.
[0024] The following is used as a cation-ized agent added to the ink jet under coat 2. Namely, salts, such as the 1st class, the 2nd class, or tertiary amine ... For example, lauryl amine acetate, stearyl amine acetate, etc.
Quarternary-ammonium-salt mold compound .. For example, lauryl trimethylammonium chloride, lauryldimethyl ammoniumchloride, etc.
Cationic high molecular compound .... For example, the poly allylamine hydrochloride, poly dimethylaminoethyl methacrylate, poly diethylamino ethyl acrylate, etc.
The monomer independent which has a cationic radical, or copolymer with other matter ..... For example, diethylamino styrene.
In addition, acrylic resin, dicyandiamide system resin, etc. which have polyalkylene polyamine, secondary amine, tertiary amine, and the 4th class ammonium can be used. Although the amount used changes also with the pigment to choose, it is usually added to about 4 - 20% to a pigment.
[0025] As data smoothing of the ink jet under coat 2 processed if needed, the front face of an application layer is made smooth by letting between the nips of a roll pass using the super calender used for usual, a gloss calender, thermostat PURANISSHA, etc.
[0026] Next, a laminating is carried out on said ink jet under coat 2, and the ink jet cast coat layer 3 is an ink jet cast coat coating by dry conversion 4 - 15 g/m2 Application desiccation is carried out and it forms in extent. The presentation of this ink jet cast coating uses a pigment, adhesives, and a release agent as a principal component, and addition use of a dispersant, a viscous regulator, the cross linking agent, etc. is carried out suitably at this if needed.
[0027] The purpose which forms the ink jet cast coat layer 3 is because it demonstrates more effectively fixable [of high glossiness, the gloss smooth feeling near a photograph, high printing concentration, and outstanding ink jet ink] etc. by making the absorptivity which was excellent in ink jet ink hold, and the ink jet cast gloss layer 4 formed on this. In having applied the ink jet cast gloss coating directly on the ink jet under coat 2, only about 35% of glossiness is obtained and the 60-degree specular gloss by JIS-Z -8741 cannot attain the original purpose without forming the ink jet cast coat layer 3 incidentally.
[0028] As a pigment of the ink jet cast coat layer 3, the silica of hydrated alumina and a particle etc. is used, and especially, since it is more advantageous from a working plane and a quality side to make cast coating concentration to be used into high concentration, the gamma-alumina of hydrated alumina is preferably used for formation of a cast side.
[0029] The thing same as adhesives of the ink jet cast coat layer 3 as the adhesives of the ink jet primer used for formation of said ink jet under coat 2 can be used. these adhesives choose suitably and are independent -- or it uses together and optimum dose is used.
[0030] an application side adds in order to make it separate smoothly from the cast drum which carried out chrome plating, a fatty acid, a fatty-acid salt, various wax emulsions, etc. are chosen suitably, and the release agent of the ink jet cast coat layer 3 is independent -- or it is used together and used. However, since the fall of the absorptivity of ink jet ink will be caused if these release agents are used so much, the optimum dose

which looked at synthetically the condition of an application side of separating, and the condition of a fall of the absorptivity of ink jet ink, and took both balance is used.
[0031] Next, a laminating is carried out on said ink jet cast coat layer 3, and the ink jet cast gloss layer 4 is an ink jet cast gloss coating by dry conversion 0.5-5g/m2 Application desiccation is carried out and it forms. The presentation of this ink jet cast gloss coating uses a pigment, adhesives, and a release agent as a principal component, and addition use of a dispersant, a viscous regulator, the cross linking agent, etc. is carried out suitably at this if needed.
[0032] The purpose which forms the ink jet cast gloss layer 4 is making fixable [of 60 - 80% of high glossiness, the gloss smooth feeling near a photograph, high printing concentration, and outstanding ink jet ink] etc. hold with the 60-degree specular gloss by JIS-Z -8741 on the maximum front face.
[0033] As a pigment of the ink jet cast gloss layer 4, the silica of a particle, colloidal silica 500nm or less, etc. are used, and colloidal silica 500nm or less is used preferably especially.
[0034] As adhesives of the ink jet cast gloss layer 4, the emulsion of synthetic resin, such as PVA of water soluble resin, vinyl acetate, a vinyl chloride vinyl acetate copolymer, a styrene butadiene copolymer, polyurethane, an acrylic copolymer, and a maleic-acid copolymer, is used. these choose suitably and are independent -- or it uses together and optimum dose is used.
[0035] The thing same as a release agent of the ink jet cast gloss layer 4 as the release agent used for said ink jet cast coating is used, and it chooses suitably, and it uses together and independent or the optimum dose which looked at synthetically said condition that an application side releases from mold from a cast drum similarly, and the inhibition condition of the absorptivity of ink jet ink, and took both balance is used.
[0036] Next, the manufacture approach of the ink jet recording paper of this invention is explained. First, it is the ink jet primer constituent of said presentation by dry conversion to one field of the roll-like base paper 1 as the 1st process by a coater, for example, a blade coating machine, an air knife coater, the reverse coating machine, the bar coating machine, the gravure coating machine, a die coating machine, etc. 5-20g/m2 It applies, and it dries, the ink jet under coat 2 is formed, and it rolls round in the shape of a roll so that it may become.
[0037] Since the application of the ink jet primer becomes it is good also as an application of 2 times or more also as a 1-time application, and smoother [dividing into a multilayer and applying], it is desirable here. Moreover, the application front face of the ink jet primer is processed if needed by the data-smoothing machine, for example, a super calender, the gloss calender, thermostat PURANISSHA, etc., and it is good even if more smooth.
[0038] Subsequently, as the 2nd process, it is said ink jet cast coat coating by dry conversion by the sentiment method with a cast coater on the ink jet under coat 2 rolled round in the shape of a roll 4 - 15 g/m2 A mirror plane is made to imprint, the ink jet cast layer 3 is formed, and it rolls round in the shape of a roll at the same time you make it stuck to the cast drum which applied and carried out chrome plating by pressure so that it may become and it makes it dry.
[0039] Furthermore, it is said ink jet cast gloss coating by dry conversion by the sentiment method with a cast coater as the 3rd process 0.5 - 5 g/m2 It applies so that it

may become, make it stuck to said cast drum which carried out chrome plating similarly by pressure, a mirror plane is made to imprint at the same time it makes it dry, the ink jet cast gloss layer 4 is formed, it rolls round in the shape of a roll, and the ink jet recording paper of this invention is obtained.

[0040] Next, generally explanation of the cast method for manufacturing cast paper learns three approaches, the sentiment method, the gelling method, and a rewet system.

[0041] That is, the sentiment method is an approach of it also being called the direct method, applying a cast coating to a base paper as mentioned above, making it stuck to a cast drum by pressure with a damp or wet condition, and copying the mirror plane of a cast drum to desiccation and coincidence.

[0042] The gelling method is an approach of it also being called the solidifying method, and a cast coating being applied to a base paper, processing the application layer of a damp or wet condition with an acid or the water solution of salts, making it stuck to a cast drum by pressure in the condition of having made the application layer gelling, and copying the mirror plane of a cast drum to desiccation and coincidence.

[0043] After a rewet system applies a cast coating to a base paper, and dries and it graduates a front face with a super calender etc., it is an approach of making it stuck to a cast drum by pressure where carry out humidity of the application layer with water solutions, such as phosphate, and it made it swelling and it is swollen again, and copying the mirror plane of a cast drum to desiccation and coincidence.

[0044] Approaches, such as this, are recognized widely and the delicate difference was held in the quality side of the cast paper obtained by each approach. In this invention, while the workability in which it was easy to carry out field formation of a cast side, and the sentiment method as a result of examining by each approach was stabilized is acquired, it adopts from the reasons nil why the quality acquired can be adapted for the ink jet recording paper for photograph grade the optimal etc.

[0045]

[Example] Next, although an example and the example of a comparison explain this invention to a detail, this is for explaining the effectiveness of this invention concretely, and this invention is not limited by this.

[0046] It is 113g/m2 as a <example 1> base paper. Using the stencil paper for coat paper, as the 1st process, an air knife coater is used for a coater and it is the following ink jet primer constituent by dry conversion 14 g/m2 Application desiccation was carried out so that it might become, the ink jet under coat 2 was formed, and it rolled round in the shape of a roll. Data smoothing was carried out on condition that linear pressure 150 kg/cm with the super calender after desiccation, and it rolled round in the shape of a roll again.

<Ink jet primer constituent> (a display is the dry weight section)

Carplex BS304N (a silica, Shionogi& Co., Ltd. make) 100 weight sections PATELACOL IJ50 (an urethane emulsion, Dainippon Ink & Chemicals, Inc. make) 17 weight sections PATELACOL D302 (an urethane emulsion, Dainippon Ink & Chemicals, Inc. make) Twelve weight sections PVA217 (PVA, Kuraray Co., Ltd. make) Ten weight sections PAS-H-10L (cation-ized agent)

(A diaryl dimethylannmonium chloride polymerization object, Nitto Boseki Co., Ltd. make) The ink jet primer of 20% of coating concentration was created by the 7 weight sections above-mentioned combination.

[0047] Subsequently, it is the following ink jet cast coat coating constituent by dry

conversion by the air knife coater of the cast coater of the sentiment method as the 2nd process on the ink jet under coat 2 which carried out data smoothing of the front face 12g/m2 While it applies so that it may become, and you make it stuck to the cast drum which carried out chrome plating with the damp or wet condition by pressure and it was made to dry, the mirror plane of a cast drum was made to imprint, the ink jet cast coat layer 3 was formed, and it rolled round in the shape of a roll.
<Ink jet cast coat coating constituent> (a display is the dry weight section)
AKP-G015 (gamma-alumina, Sumitomo Chemical Co., Ltd. make) A 100 weight sections acetic acid (commercial reagent article) In an owner figure, 4 weight sections PVA210 (PVA, Kuraray Co., Ltd. make) Twelve weight sections ultra ZORU SIX11 (Ganz formation an acrylic emulsion, shrine make) Eight weight sections cello ZORU 524 (a release agent, carnauba wax, the Chukyo fats-and-oils company make) The ink jet cast coat coating of 30% of coating concentration was created by the 1 weight section above-mentioned combination.
[0048] On the ink jet cast coat layer 3, as the 3rd process furthermore, by the air knife coater of the cast coater of the sentiment method It is the following ink jet cast gloss coating constituent by dry conversion 0.5g/m2 It applies so that it may become. Make the mirror plane of a cast drum imprint, form and roll round the ink jet cast gloss layer 4, and this is judged in a predetermined dimension at the same time you make it stuck to the cast drum which carried out chrome plating by pressure and it makes it dry with a damp or wet condition. The basis weight by this invention is 139.5 g/m2. The ink jet recording paper of an example 1 was obtained.
<Ink jet cast gloss coating constituent> (a display is the dry weight section)
KATAROIDO SI 30 (colloidal silica, a catalyst formation industrial company make) 30 weight sections PVA205 (PVA, Kuraray Co., Ltd. make) Ten weight sections oleic acid ammonium (a release agent, commercial item) The ink jet cast gloss coating of 3% of coating concentration was created by the 6 weight sections above-mentioned combination.
[0049] coating concentration of the ink jet cast gloss coating constituent used in the <example 2> example 1 is made into 12%, and wet -- the bar coating machine of the cast coater of law -- using it -- the amount of applications of an ink jet cast gloss coating constituent -- dry conversion -- 5 g/m2 ** -- the basis weight according to this invention like [everything but having carried out] an example 1 -- 144 g/m2 The ink jet recording paper of an example 2 was obtained.
[0050] For everything but having considered combination of the ink jet cast gloss coating constituent used in the <example 3> example 1 as the following combination, the basis weight according to this invention like an example 1 is 139.5 g/m2. The ink jet recording paper of an example 3 was obtained.
<Ink jet cast gloss coating constituent> (a display is the dry weight section)
Snow tex O (colloidal silica, Nissan Chemical Industries, Ltd. make) 20 weight sections PVA205 (PVA, Kuraray Co., Ltd. make) Five weight sections oleic acid ammonium (a release agent, commercial item) The ink jet cast gloss coating of 3% of coating concentration was created by the 5 weight sections above-mentioned combination.
[0051] The thing to formation of the ink jet cast coat layer of the 2nd process was used as the ink jet recording paper of the example 1 of a comparison in the <example 1 of comparison> example 1. (Basis-weight 139 g/m2)

[0052] the coating concentration is made into 5% for the same ink jet cast coat coating constituent as an example 1, and wet on the ink jet cast coat layer obtained at the 2nd process of the <example 2 of comparison> example 1, -- the bar coating machine of the cast coater of law -- using it -- the amount of applications -- dry conversion -- 3 g/m2 ** -- everything but having carried out was taken as the ink jet recording paper of the example 2 of a comparison like the example 1. (Basis-weight 142 g/m2)
[0053] It measured to the each with the measuring method which corresponded and showed each parameter shown below by having made into the test sample the ink jet recording paper obtained in examples 1-3 and the examples 1-2 of a comparison, and the result was summarized in Table 1.
[0054] The specular gloss of 60 degrees by JIS-Z -8741 of a <parameter and test-method> 1. glossiness maximum front face is measured. A unit is displayed by %.
[0055] 2. Epson printer PM-700C is used for a printing concentration maximum front face, use the black of assignment ink, print a standard test chart with an exclusive gloss film as printing mode, and measure the concentration of an assignment printing part (black) with the 24 hours after [printing] Macbeth densimeter RD 915.
[0056] 3. Epson printer PM-700C is used for a printing water resisting property maximum front face, assignment ink is used, a standard test chart is printed with an exclusive gloss film as printing mode, and three drops of waterdrop is dropped at the appointed place 24 hours after printing, grind against an after [10 seconds] tissue paper 3 times lightly, and observe the existence of the elution of the ink to a tissue paper visually.
(Criterion)
O ... It excels very much. O ... It excels. ** ... Usually.
x ... It is inferior. xx ... It is very inferior.
[0057] 4. One drop of waterdrop is dropped at a recording paper water resisting property maximum front face, grind against a fingertip 10 times lightly after 10 seconds, and observe the existence of the elution of a coating visually.
(Criterion)
O ... It excels very much. O ... It excels. ** ... Usually.
x ... It is inferior. xx ... It is very inferior.
[0058] 5. use printer PM-700C by said Epson for the absorptivity maximum front face of ink, use assignment ink, print with an exclusive gloss film as printing mode, and a printing side should grind -- observe the existence of a blot of the ink of a color overlapping part visually.
(Criterion)
O ... It excels very much. O ... It excels. ** ... Usually.
x ... It is inferior. xx ... It is very inferior.
[0059] 8. Judge the gloss smooth feeling of a gloss smooth feeling maximum front face by the following five steps with vision.
(Criterion)
O ... It excels very much. O ... It excels. ** ... Usually.
x ... It is inferior. xx ... It is very inferior.
[0060] <The result of a trial> [Table 1]

[0061] It turns out that the quality of the examples 1-3 of the ink jet recording paper of this invention is compared with the quality of the examples 1-2 of a comparison, and it excels extremely also in the item of a gap so that it can read in the result of the above-mentioned trial.

[0062]

[Effect of the Invention] As stated above, according to the ink jet recording paper and its manufacture approach of this invention The cast application layer formed in two-layer in the ink jet cast coat layer and the ink jet cast gloss layer acts each other mutually through the ink jet under coat formed in one field of a base paper. The maximum front face serves as the ink jet recording paper which held properties, such as fixable, the absorptivity, etc. of 60 - 80% of high glossiness, the gloss smooth feeling near a photograph, high printing concentration, the outstanding printing water resisting property, and outstanding ink jet ink, with the 60-degree specular gloss by JIS-Z -8741.

[0063] In addition, in having formed the cast application layer of any one layer of an ink jet cast coat layer or an ink jet cast gloss layer, the ink jet recording paper holding the above properties is not obtained.

[0064] Moreover, an ink jet under coat covers the granularity of the front face of a base paper, makes it smooth nature, and raises further the smooth nature of the ink jet cast coat layer formed on this, and an ink jet cast gloss layer. Moreover, when a cation-ized agent contains, the coloring concentration of ink jet ink is raised. Furthermore, by formation of an ink jet under coat, dispersion in permeability becomes small and the cast workability when forming the ink jet cast coat layer and ink jet cast gloss layer which are formed on this is raised further.

[0065] Moreover, an ink jet cast coat layer makes more effective exertion of the property of the ink jet cast gloss layer formed on this, without absorbing ink jet ink certainly, rubbing and causing ** blocking, smeariness, etc.

[0066] Furthermore, since the ink jet cast gloss layer used colloidal silica for the pigment of an ink jet cast gloss layer, when an ink jet cast gloss coating is applied on an ink jet cast coat layer, it is presumed that the colloidal silica of a very fine particle enters into the

detailed crack and the irregularity of an ink jet cast coat layer, making an ink jet cast coat layer smoother and the property which the ink jet cast gloss coating itself has become entangled with them, and the gloss smooth feeling near high glossiness and a high photograph is obtained.

[0067] Moreover, since the cast layer was formed in two-layer by the sentiment method, while according to the manufacture approach of the ink jet recording paper of this invention being easy to carry out field formation of a cast side and acquiring the stable workability, the ink jet recording paper which held many above properties in the quality side can be manufactured cheaply easily.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the vertical section side elevation of the ink jet recording paper of this invention.

[Description of Notations]

1 -- Base paper

2 -- Ink jet under coat

3 -- Ink jet cast coat layer

4 -- Ink jet cast gloss layer